

AEROSPACE RF CONNECTORS

RF CONNECTORS FOR MILITARY, COMMERCIAL, AND CIVIL AVIATION

In aerospace and defense, there are different types of connections that are used for connecting cables. These connections can be found on different types of aircraft such as helicopters, UAVs, ground vehicles, and even commercial or business airplanes. We will focus on those connectors that deal with RF communications- used to connect antennas to the communication systems of aircraft.

Our PIC Avionics RF Connectors are designed and fabricated to meet industry specifications including MIL-C-39012, ARINC 600, and ARINC 404, CECC 22 220, IEC 61169-50, MIL-C-3643, MIL-C-49142, MIL-C-81659, MIL-PRF-30192.

These rugged and durable connectors seal out moisture and hydraulic fluids, are durable enough to withstand extreme environmental variations in temperature and pressure, and resist vibration.

BAYONET CONNECTOR DESIGNS

We offer a variety of bayonet connectors, including female or male connectors and with or without strain reliefs. These bayonet-style connectors offer excellent electrical performance as well as mechanical durability. The bayonet locking mechanism provides positive locking action during mating operation while preventing unintentional disconnection during vibration from occurring once mated together. They can be used for quick disconnect RF applications, generally used at lower frequencies (up to 4 GHz) since the quick disconnect is much less secure and shock resistant than a threaded connector which is very stable when completely threaded onto its mate.

•**BNC** – The BNC connector is a commonly used connector in the aerospace industry. It was originally designed for military applications but is mainly used for lower frequency broadcast applications today, such as 75 Ohm video. It is standardized according to IEC 60169-8.



Shown: BNC Straight Plug P/N 190312

•**Mini-BNC** – The Mini BNC connector is a mini version of the standard BNC connector. It was developed for space savings, taking approximately 40% less room compared to a typical BNC set up. Mating the connector is quick and easy; a bayonet coupling nut locks it into place just like its larger counterpart.

•**HD-BNC** – The HD-BNC connector was developed to further improve space savings to the BNC series of connectors, but also enhances electrical and mechanical performance. The HD-BNC can be used for 4k-SDI and Ultra High-Definition video applications up to 12 GHz.

•**C** – The type “C” connector is a large bayonet-style connector used in the aerospace industry for antenna hook-ups. This connector is rated to 12 GHz and typically used in lower frequency (L-band) applications, such as for a MODE-S system antenna. It is similar to a type N connector, but with a bayonet coupling for rapid connection and disconnection for larger cables.

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THREADED CONNECTOR DESIGNS

Our threaded connectors are available in a variety of styles including SMA, SMC, TNC, N and HN thread types. These threaded connectors seal out moisture and hydraulic fluids from the connection point. They are available in both male and female configurations with standard or reverse angle options. These connector designs can be used for RF applications such as data communication systems, radar systems, air traffic control systems, electronic warfare systems and more. Connectors with a threaded coupling nut get screwed onto the mating connector listed below. The main difference in the connectors below is the interface. Threaded connectors are quite often used because of the snug fit which helps with vibration and shock issues. This also allows for use at a higher frequency.

- **SMA (Sub Miniature A)** – SMA connectors are among the smallest threaded RF connectors. It is designed for smaller cables, generally operating at DC (0 GHz) to 11 GHz. Like all connectors, there are straight and 90° versions, which allow for a variety of configurations.



Shown: SMA Connectors

- **SMC (Sub Miniature C)** – The SMC connector is another small-form-factor RF connector, predominantly used with smaller OD cables. There are two types of SMC connectors - Male and Female. Male SMC connectors have a center pin, while Female SMC connectors have an internal hex nut. This connector is often used in video applications at lower frequencies.

- **N** – N-Type connectors are larger threaded connectors, usually used on cables with an outside diameter larger than 0.25 inches. N-Type connectors feature a threaded coupling mechanism and are generally rated for frequencies between DC and 11 GHz. These connectors are typically used in situations where excellent RF performance and mechanical robustness is required.

- **TNC (Threaded Navy Connector)** – The TNC connector is a widely used RF connector within the aerospace industry today. It's a mid-size, threaded coupling connector that's used on virtually all TCAS (Traffic Collision Avoidance System) antennas and antennas in general. The frequency range of a standard M39012 TNC connector is DC (0 GHz) to 11 GHz. The TNC series shares its contact design with the BNC series and utilizes a threaded coupling nut for secure mating.



Shown: TNC Connectors

- **HN-** High-frequency systems often use the HN connector, which is a high-voltage version of the N connector. The HN connector can handle power levels that are higher than those handled by other connectors, making it ideal for applications that use high frequencies and large amounts of power. This connector has a frequency range of DC to 4 GHz. It is the largest of the threaded connectors that PIC offers.

In addition to the standard thread sizes listed above, we also offer custom thread sizes for any application where it may be necessary to have a custom fit for your specific avionics equipment need.

If you are looking for a secure, reliable and dedicated supplier of PIC RF Connectors, you've come to the right place. For further information on our line of products, please [contact us](#).